

4,786,359 to Stark et al. (hereinafter *Stark*). Claim 1 is the independent claim subject to this ground of rejection. Applicants traverse the rejection.

The Examiner contends in the Office Action that Stark teaches “a vacuum port (not shown; column 3, lines 20-30) in said first electrode (42; Figure 4; column 3, lines 40-45) for evacuating said processing region (inside volume 25)”. Stark discloses that the “lower electrode 42 can comprise suitable passageways, known per se in the art, for controlling the temperature thereof”. Applicants cannot locate a reference numeral 25 for a volume that the Examiner identifies in *Stark*. Nevertheless, *Stark* fails to disclose that these passageways in any way communicate with the processing region in *Stark* that is generally between the electrodes 42, 43 or that these passageways are used to evacuate the processing region.

When the *Graham* factual inquiries are considered, unresolved differences remain between independent claim 1 and the combination of *Stark* with *Okamura* that are sufficient to preclude a *prima facie* case of obviousness. For at least this reason alone, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1.

Furthermore, in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. In this instance, Applicants submit that claim 1 would not have been considered obvious when considered as a whole.

The Examiner further contends on page 5 that the motivation for this modification to *Okamura* based upon *Stark* is “for generating lower pressure prococesses (sic)”. To the contrary, a person having ordinary skill in the art would appreciate that any fluid used to regulate the temperature of the lower electrode (42) is not exhausted into the processing region. The processing space has a very controlled environment of pressure and process gas for conducting the process that is transpiring between the electrodes (42, 43) in *Stark*. For example, *Stark* discloses the process gas is a mixture of xenon or krypton gas, oxygen, and CF<sub>3</sub>Br introduced with specific flow rates and a specific chamber pressure. *See* col. 3, line 63 – col. 4, line 50. Hence, the passageways in the lower electrode (42) would not communicate with the processing

region. Moreover, even if an attempt were made to modify the passageways in the lower electrode (42) in *Stark* for use as vacuum ports (which Applicants dispute is even possible), the wafer (44) and ring (46) cover the surface of the lower electrode (42) such that any such passageways would be closed by the wafer (44) and ring (46). The modified passageways would be incapable of functioning as vacuum ports because they would be blocked by the wafer (44) and ring (46). Consequently, the proposed modification to *Okamura* is not objectively supported by the disclosure in *Stark* or by the knowledge of a person having ordinary skill in the art.

When claim 1 is considered as a whole, the Examiner's objective reasoning to modify *Okamura* based upon *Stark* is improper and is insufficient to support a *prima facie* case of obviousness. For at least this reason alone, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1.

Claim 1 is patentable for additional reasons.

The Examiner contends that "it would have been obvious to one of ordinary skill in the art at the time the invention was made for *Okamura* to establish 'an atmospheric pressure space' between 25/10a interface based on the process for making *Okamura*'s apparatus". *Okamura* discloses that "[t]he first embodiment is characterized in that the main members of the reaction chamber 10, namely, upper bottom 10a, lower bottom 10b, sidewall 10c, sample stage 11 (except for the substrate holding portion 11a) and periphery of the upper electrode 13, are covered with synthetic quartz protective members 25". See col. 5, line 64- col. 6, line 2. Specifically, *Okamura* fails to disclose how the protective members 25 "cover" the main members of the reaction chamber 10. Hence, the Examiner must be contending that this is inherent in *Okamura*.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. The Examiner must provide a basis in fact and/or technical reasoning to reasonably support his determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Here, the Examiner fails to provide such a basis in fact and merely supplies a conclusion.

Because *Okamura* is silent as to the issue, it is more probable that there is no gap between the "25/10a "interface" in *Okamura*. The term "covered" does not implied that the assembly

incorporates gaps between the protective members (25) and the main members of reaction chamber (10) that could be at atmospheric pressure. Moreover, even if gaps were present (which Applicants refute), the vacuum envelope of the reaction chamber is defined by the space inside the main members of the reaction chamber (10). The protective members (25) are disposed in the space inside the main members of the reaction chamber (10). Hence, even if gaps were present, these gaps would be at the same vacuum as the space inside the reaction chamber (10); not at atmospheric pressure. Hence, the reasoning in the Office Action is not objective that leads the Examiner to conclude that an atmospheric pressure space could be established between the “25/10a interface” based on the process for making Okamura’s apparatus.

When the *Graham* factual inquiries are considered, unresolved differences remain between independent claim 1 and the combination of *Stark* with *Okamura* that are sufficient to preclude a *prima facie* case of obviousness. *Okamura* fails to expressly or inherently disclose “an atmospheric pressure space between said shell and said first electrode, said second electrode, and said separating member”. For at least this reason alone, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1.

The Examiner states that “[m]otivation for Okamura to establish ‘an atmospheric pressure space’ between 25/10a interface based on the process for making Okamura’s apparatus is for reducing product-by-process manufacturing costs”. This statement amounts to mere speculation and is not supported any objective evidence. Rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). The Examiner has failed to establish a rationale link between the modification proposed to *Okamura* and the alleged reduction of “product-by-process manufacturing costs”. When claim 1 is considered as a whole, the Examiner’s objective reasoning to modify to *Okamura* based upon *Stark* is improper and is sufficient to support a *prima facie* case of obviousness. For at least this reason alone, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1.

Because claims 5, 6, and 18 depend from independent claim 1, Applicants submit that *Okamura* fails to anticipate these claims for at least the same reasons as claim 1. Furthermore, these dependent claims recite unique combinations of elements not disclosed or suggested by *Okamura* and *Stark*

*Claims 2 and 3 over Okamura in view of Stark and Shan*

Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okamura* and *Stark* further in view of U.S. Patent No. 5,891,350 to Shan et al. (hereinafter *Shan*). *Shan* fails to cure the deficiencies of *Okamura* and *Stark*. Hence, each of these dependent claims is patentable for at least the same reasons as independent claim 1. Furthermore, each of these dependent claims recites a unique combination of elements not disclosed or suggested by *Okamura*, *Stark*, and *Shan*.

*Claims 15-17 over Okamura in view of Stark, Suntola, and Maher*

Claims 15-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okamura* and *Stark* further in view of U.S. Patent No. 5,711,811 to Suntola et al. (hereinafter *Suntola*) and U.S. Patent No. 4,381,965 to Maher, Jr., et al. (hereinafter *Maher*). Claim 15 is the sole independent claim subject to this ground of rejection. Applicants traverse the rejection.

Independent claim 15 recites “a vacuum port in said first electrode for evacuating said first and second processing regions to a sub-atmospheric pressure suitable for generating the plasma from the process gas in said first processing region and said second processing region”, “an electrically conductive shell surrounding said first electrode, said second electrode, said third electrode, said first separating member, and said second separating member”, and “an atmospheric pressure space between said shell and said first electrode, said second electrode, said third electrode, said first separating member, and said second separating member”.

With regard to similar recitations in claim 1, the deficiencies of *Okamura* and *Stark* are discussed above in conjunction with the traversal of the rejection of claim 1. *Suntola* and *Maher*, whether considered individually or collectively, fail to remedy these deficiencies of *Okamura*

and *Stark*. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness because these deficiencies in comparison with claim 15 evidence a failure to resolve the *Graham* factual inquiries. For this reason, Applicants request that the Examiner withdraw the rejection.

Because claims 16 and 17 depends from independent claim 15, Applicants submit that these claims are also patentable for at least the same reasons discussed above. Furthermore, these dependent claims recite unique combinations of elements not disclosed or suggested by *Okamura*, *Stark*, *Suntola*, and *Maher*.

*Claims 4, 7, and 11-14 over Okamura in view of Stark, Shan, and Hirooka*

Claims 4, 7, and 11-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okamura* in view of *Stark* and *Shan* and further in view of U.S. Patent No. 6,700,089 to *Hirooka* (hereinafter *Hirooka*). *Hirooka* fails to remedy the deficiencies of *Okamura*, *Stark* and *Shan*. Hence, Applicants submit that these dependent claims are patentable for at least the same reasons as independent claims 1 and 15. Furthermore, dependent claims 4, 7, and 11-14 recite unique combinations of elements not disclosed or suggested by *Okamura*, *Stark*, *Shan*, and *Hirooka*.

**Conclusion**

Applicants have made a bona fide effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing remarks, this application is submitted to be in complete condition for allowance. Accordingly, a timely notice of allowance to this effect is earnestly solicited. In the event that any issues remain outstanding, the Examiner is invited to contact the undersigned to expedite issuance of this application.

Applicants do not believe any fees are due in connection with filing this communication. However, if such petition is due or any fees are necessary, the Commissioner may consider this

to be a request for such and is hereby authorized to charge any under-payment or fees associated with this communication, or to credit any over-payment, to Deposit Account No. 23-3000.

Respectfully submitted,

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